

TYPHOON WILLIE (27W)

I. HIGHLIGHTS

Never more than 90 nm (170 km) from shore, Willie circumnavigated Hainan Island while undergoing a counter-clockwise loop. Willie was a small TC, and was part of a three-TC outbreak along the monsoon trough, with the larger TCs Tom (25W) and Violet (26W) to its northeast.

II. TRACK AND INTENSITY

On 17 August, the axis of the monsoon trough stretched from Bangladesh to the Gulf of Tonkin, and from there into the WNP where the large typhoons Tom (25W) and Violet (26W) and a subtropical low had formed along it (see Figure 3-25-1a, b in Tom's (25W) summary). The small area of deep convection that became Willie was first mentioned on the 170600Z September Significant Tropical Weather Advisory based on its persistence near a low-level cyclonic circulation located to the southwest of Hainan Island. The area of deep convection moved to the east-southeast and became better organized, prompting the JTWC to issue a TCFA at 171130Z followed by the first warning, valid at 171800Z, on Tropical Depression (TD) 27W. Six hours later, TD 27W was upgraded to Tropical Storm Willie based on several data sources:

- 1) a 171000Z report (received later at the JTWC) of 35 kt (18m/sec) sustained wind from the M/V GECO Emerald (a ship servicing the oil rigs south of Hainan);

- 2) a scatterometer pass at 171521Z supporting 35 kt one-minute sustained wind near the LLCC; and,

- 3) a significant improvement in convective organization.

During the afternoon of 19 August Willie acquired a ragged eye and became a typhoon (Figure 3-27-1). Willie maintained a peak intensity of 65 kt (33 m/sec) for 24 hours as it rounded the northeastern end of

Hainan. The system weakened slightly after passing through the narrow Hainan Strait, but became a minimal typhoon once again as it crossed the Gulf of Tonkin on a west-southwest track. As a minimal typhoon, Willie made landfall at approximately 221200Z in northern Vietnam near Vinh. Continuing on a southwestward track it crossed Laos into Thailand. The final warning, valid at 230000Z, was issued as the weakening system moved into northeastern Thailand and dissipated.

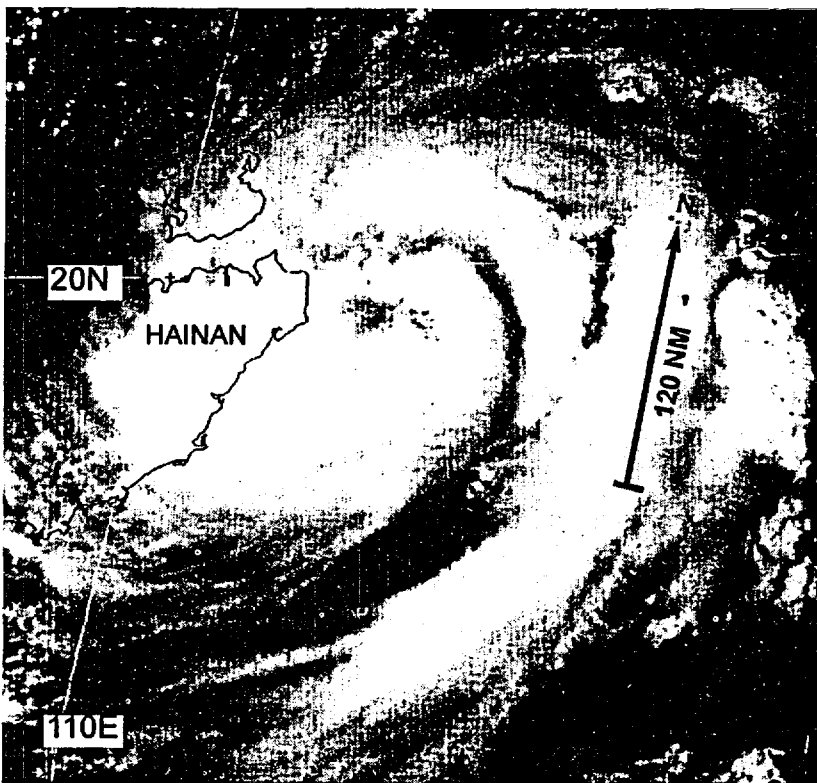


Figure 3-27-1 Willie becomes a typhoon (190531Z September visible GMS imagery).

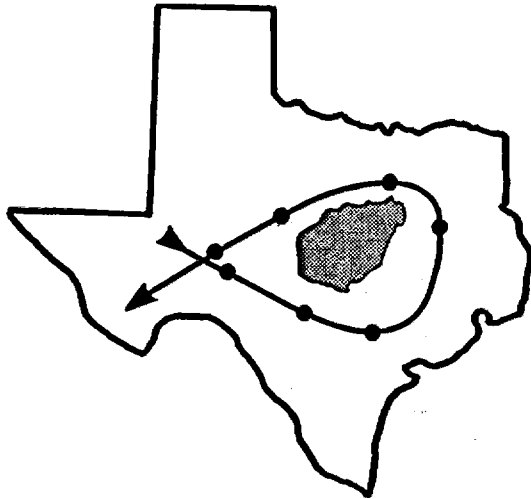


Figure 3-27-2 Willie's counter-clockwise loop fits comfortably within the boundaries of the State of Texas. Hainan Island (shaded) is superimposed. Dots show Willie's position at 24-hour intervals.

III. DISCUSSION

Unusual motion

Willie circumnavigated Hainan Island while undergoing a counter-clockwise loop. The dimensions of the oval-shaped loop were 300 nm by 180 nm (550 km by 330 km) which would fit comfortably within the boundaries of the State of Texas (Figure 3-27-2). The eastward motion of Willie during the first portion of its track is consistent with its position at the southwestern end of a reverse-oriented monsoon trough with typhoons Tom (25W) and Violet (26W) located further to the east-northeast along the trough axis. Initially steered eastward by deep monsoon flow along the trough axis, Willie turned toward the north and then toward the west, as Tom (25W) and Violet (26W) exited the tropics and a ridge gradually built to the north and east of Willie.

IV. IMPACT

At least 38 people were reported killed, dozens injured and 96 missing on Hainan Island. Willie smashed homes, washed away fishing boats and dumped up to 16 inches (400 mm) of rain on areas of this island province. Most of the deaths were attributed to flooding. No reports of damage or injuries in Vietnam were received at the JTWC.